US008767592B1

(12) **United States Patent**
Sojka et al.

(10) **Patent No.: US 8,767,592 B1**
(45) **Date of Patent: Jul. 1, 2014**

(54) **SYSTEMS AND METHODS FOR CONFERENCING ENTERPRISE AND NON-ENTERPRISE CALLERS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 611 days.

(21) Appl. No.: **12/771,337**

(22) Filed: **Apr. 30, 2010**

(51) **Int. Cl.**
H04L 12/16 (2006.01)
H04Q 11/00 (2006.01)

(52) **U.S. Cl.**
USPC **370/260**; 370/259; 370/261; 370/262; 370/263; 370/264; 370/265; 370/266; 370/267; 370/268; 370/269; 370/270; 370/271

(58) **Field of Classification Search**
None
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,149,287	B1 *	12/2006	Burger et al.	379/88.17
2002/0147777	A1 *	10/2002	Hackbarth et al.	709/205
2004/0062210	A1 *	4/2004	Genter et al.	370/260
2005/0111648	A1 *	5/2005	Roome	379/210.02
2008/0298278	A1 *	12/2008	Thakkar et al.	370/260
2009/0279538	A1 *	11/2009	Merino Gonzalez et al.	370/352

* cited by examiner

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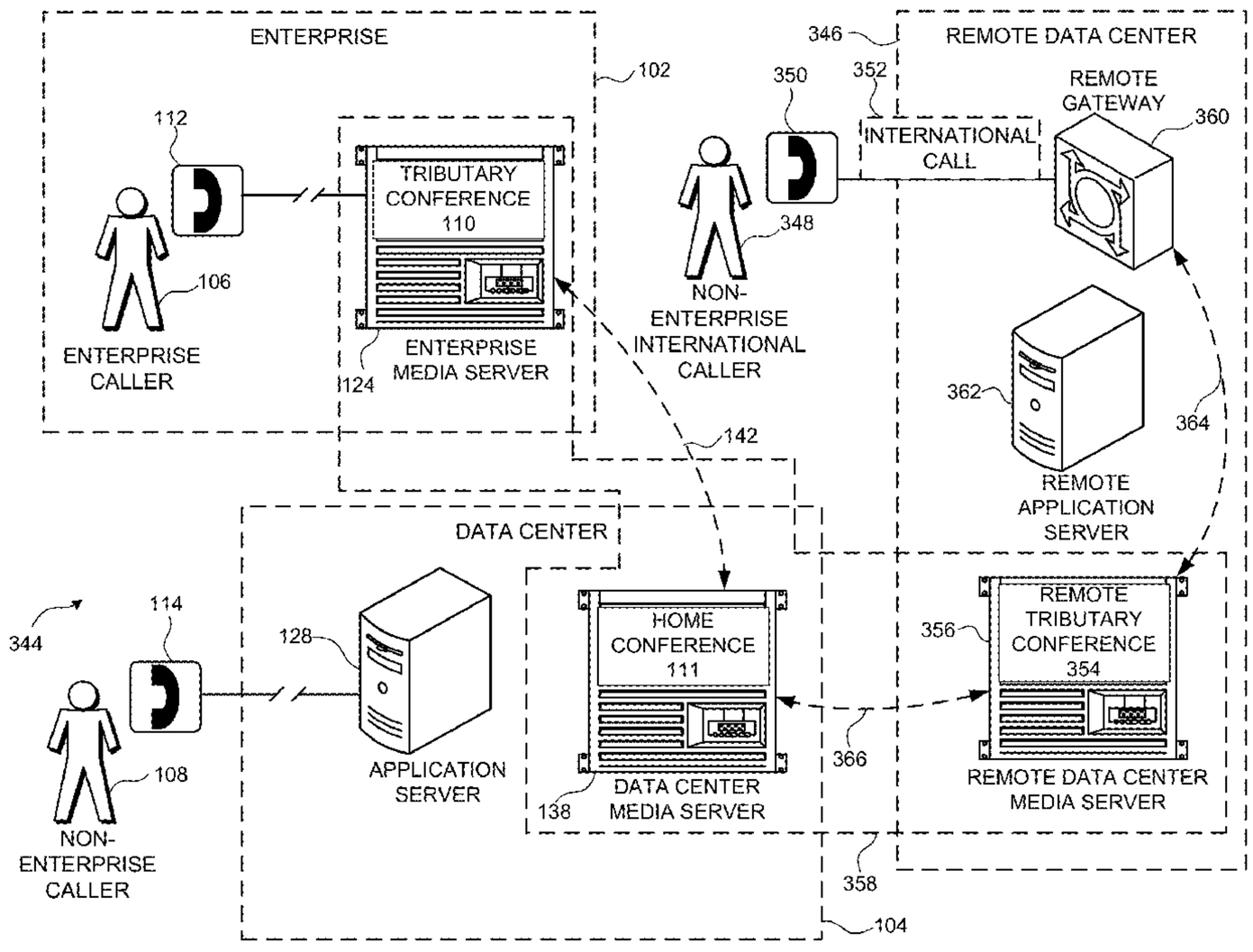
(57) **ABSTRACT**

The illustrative embodiments described herein provide improved systems and methods for conferencing enterprise and non-enterprise callers. In one embodiment, a method includes receiving a first call initiated by an enterprise caller at an enterprise, communicating with an enterprise media server to initiate a tributary conference on the enterprise media server, joining the enterprise caller to the tributary conference such that the enterprise caller is in data communication with the tributary conference, receiving a second call initiated by a non-enterprise caller via a public switched telephone network, interfacing the non-enterprise caller with a data center media server, creating a home conference on the data center media center, joining the second call to the home conference, and interfacing the home conference on the data center media server to the tributary conference on the enterprise media server to form a linked conference between the enterprise caller and the non-enterprise caller.

19 Claims, 8 Drawing Sheets



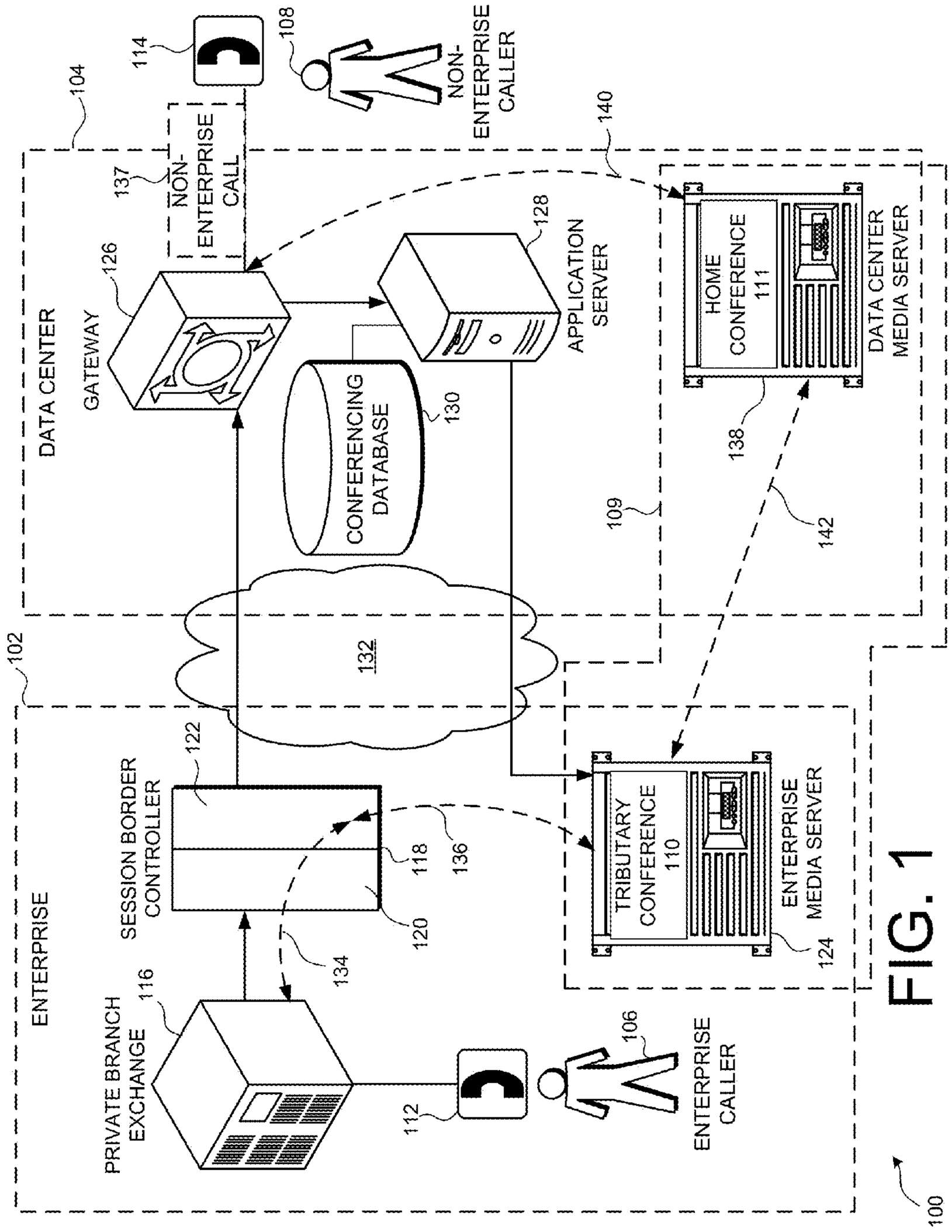

ENTERPRISE
PRIVATE BRANCH EXCHANGE
116
SESSION BORDER CONTROLLER
122
118
120
134
136
ENTERPRISE CALLER
106
112
TRIBUTARY CONFERENCE 110
ENTERPRISE MEDIA SERVER
124
102
132
DATA CENTER
GATEWAY
126
APPLICATION SERVER
128
CONFERENCING DATABASE
130
NON-ENTERPRISE CALL
137
NON-ENTERPRISE CALLER
108
114
104
140
109
HOME CONFERENCE 111
DATA CENTER MEDIA SERVER
138
142
100

FIG. 1

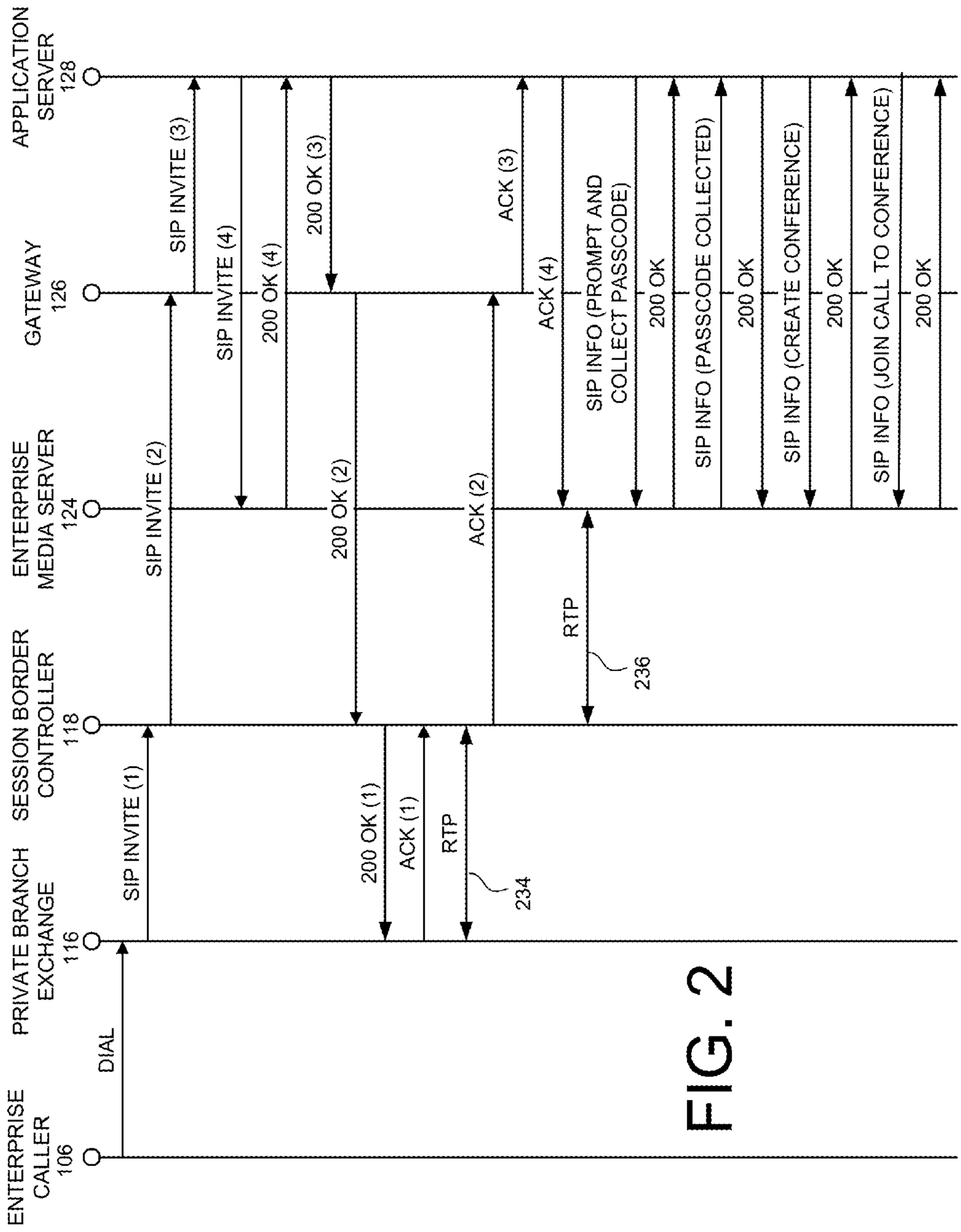

ENTERPRISE CALLER 106
PRIVATE BRANCH EXCHANGE 116
SESSION BORDER CONTROLLER 118
ENTERPRISE MEDIA SERVER 124
GATEWAY 126
APPLICATION SERVER 128
DIAL
SIP INVITE (1)
200 OK (1)
ACK (1)
RTP
234
SIP INVITE (2)
200 OK (2)
ACK (2)
RTP
236
SIP INVITE (3)
200 OK (3)
ACK (3)
SIP INVITE (4)
200 OK (4)
ACK (4)
SIP INFO (PROMPT AND COLLECT PASSCODE)
200 OK
SIP INFO (PASSCODE COLLECTED)
200 OK
SIP INFO (CREATE CONFERENCE)
200 OK
SIP INFO (JOIN CALL TO CONFERENCE)
200 OK

FIG. 2

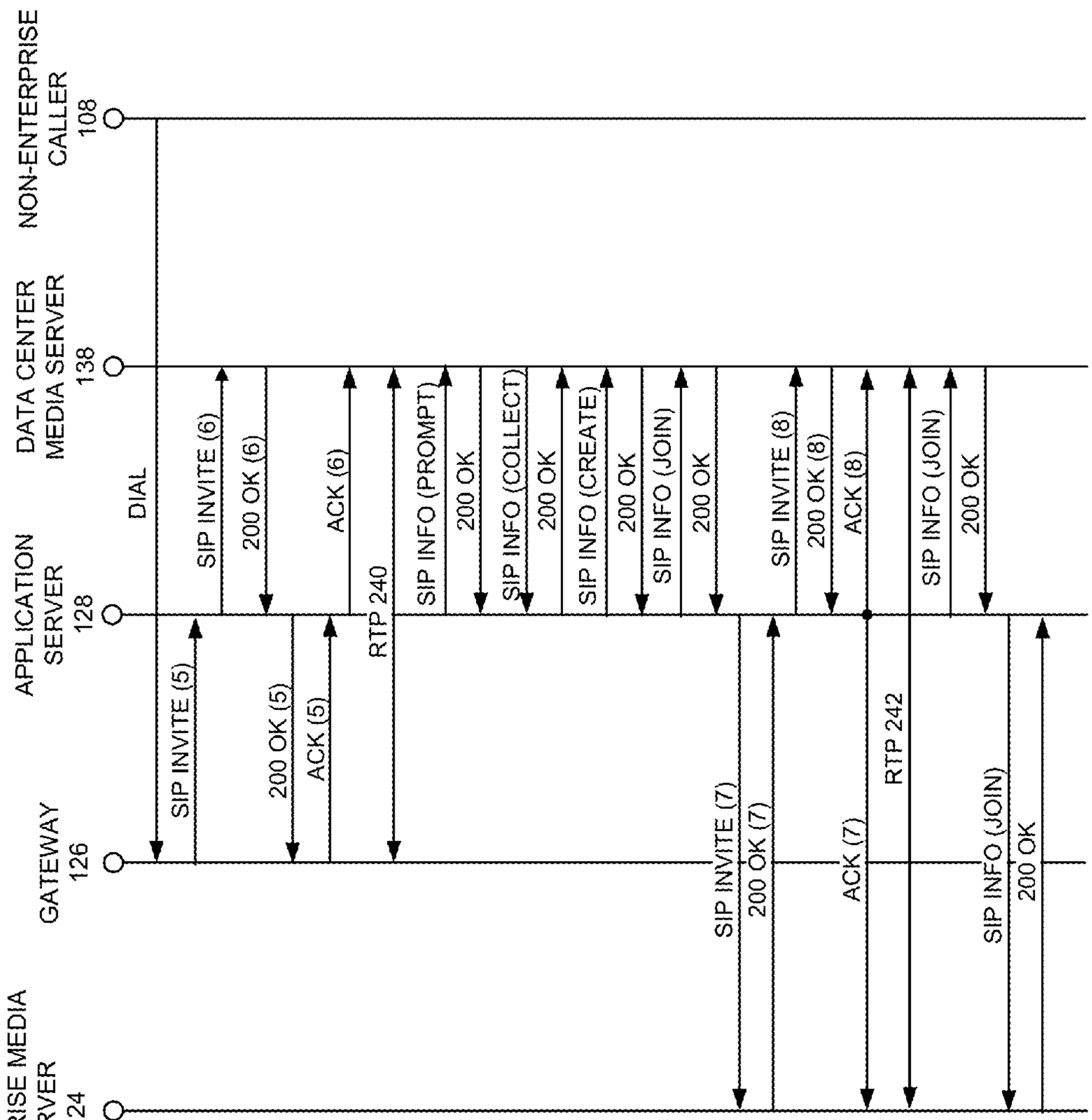

NON-ENTERPRISE CALLER 108
DATA CENTER MEDIA SERVER 138
APPLICATION SERVER 128
GATEWAY 126
ENTERPRISE MEDIA SERVER 124
DIAL
SIP INVITE (6)
200 OK (6)
ACK (6)
RTP 240
SIP INFO (PROMPT)
200 OK
SIP INFO (COLLECT)
200 OK
SIP INFO (CREATE)
200 OK
SIP INFO (JOIN)
200 OK
SIP INVITE (5)
200 OK (5)
ACK (5)
SIP INVITE (7)
200 OK (7)
ACK (7)
SIP INVITE (8)
200 OK (8)
ACK (8)
RTP 242
SIP INFO (JOIN)
200 OK
SIP INFO (JOIN)
200 OK

FIG. 3

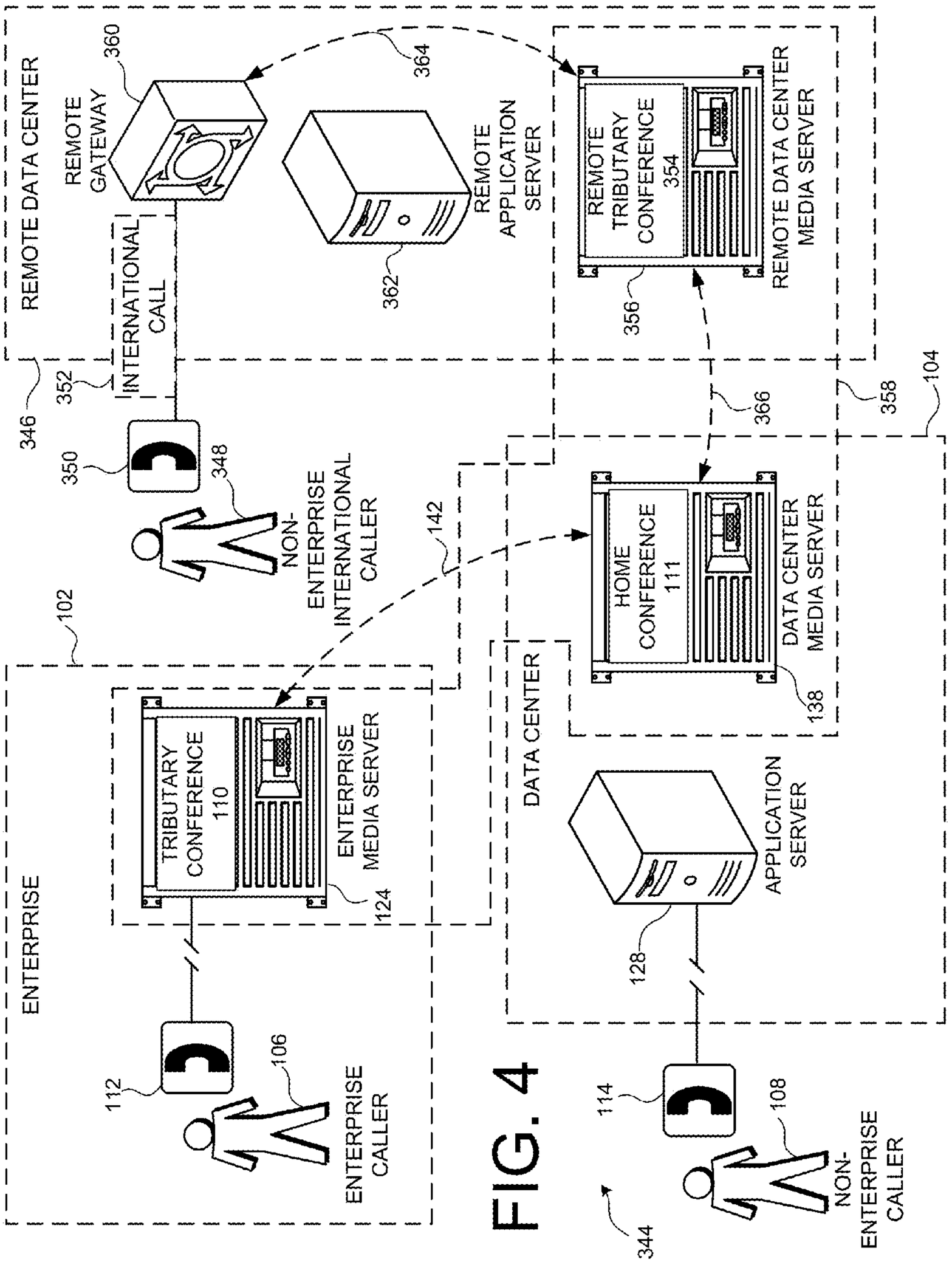

REMOTE DATA CENTER
REMOTE GATEWAY
360
364
REMOTE APPLICATION SERVER
362
REMOTE TRIBUTARY CONFERENCE 354
356
REMOTE DATA CENTER MEDIA SERVER
INTERNATIONAL CALL
352
346
350
348
NON-ENTERPRISE INTERNATIONAL CALLER
366
358
104
142
102
HOME CONFERENCE 111
DATA CENTER MEDIA SERVER
138
DATA CENTER
TRIBUTARY CONFERENCE 110
ENTERPRISE MEDIA SERVER
124
APPLICATION SERVER
128
ENTERPRISE
112
106
ENTERPRISE CALLER
114
108
NON-ENTERPRISE CALLER
344

FIG. 4

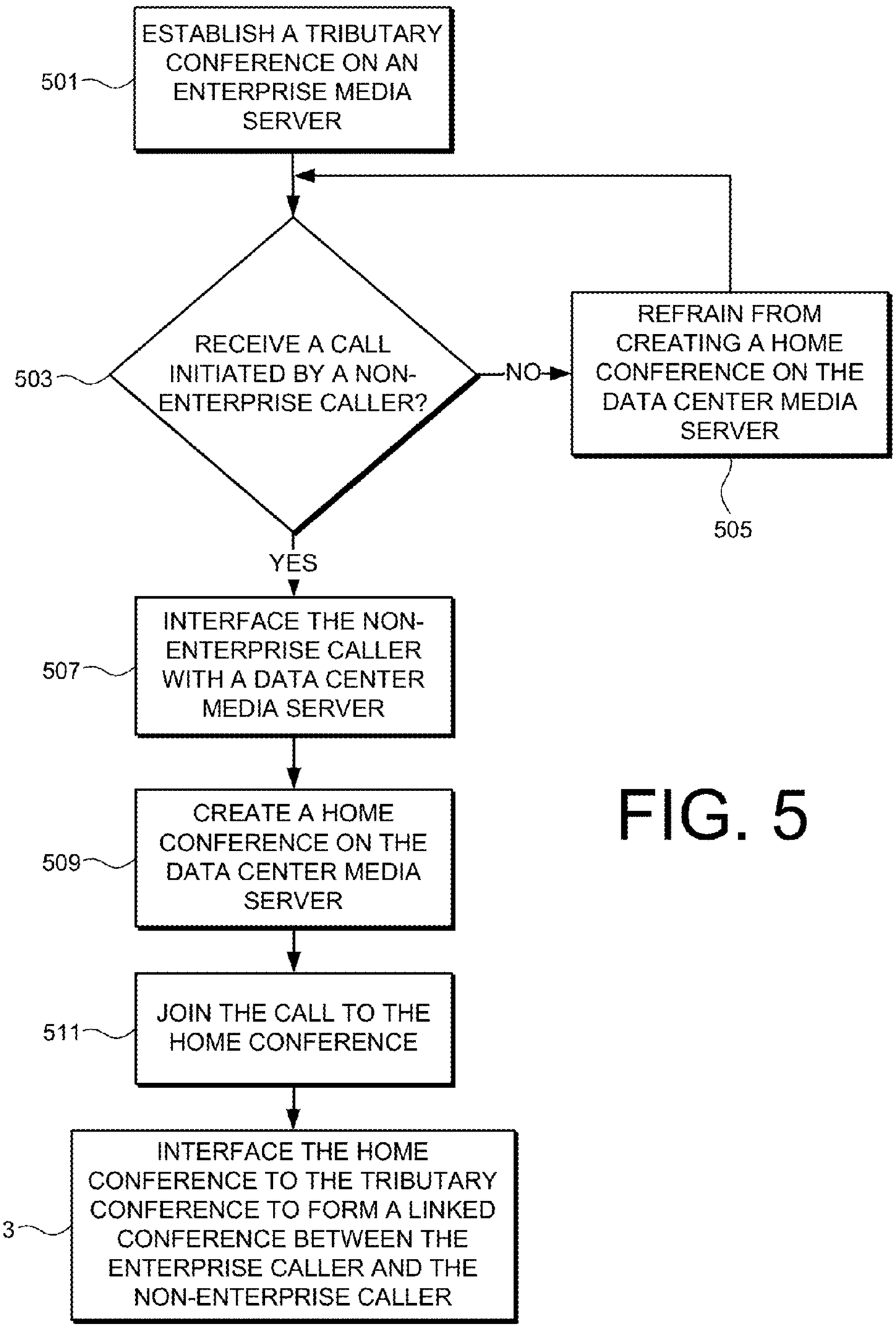

ESTABLISH A TRIBUTARY CONFERENCE ON AN ENTERPRISE MEDIA SERVER
501
RECEIVE A CALL INITIATED BY A NON-ENTERPRISE CALLER?
503
NO
REFRAIN FROM CREATING A HOME CONFERENCE ON THE DATA CENTER MEDIA SERVER
505
YES
INTERFACE THE NON-ENTERPRISE CALLER WITH A DATA CENTER MEDIA SERVER
507
CREATE A HOME CONFERENCE ON THE DATA CENTER MEDIA SERVER
509
JOIN THE CALL TO THE HOME CONFERENCE
511
INTERFACE THE HOME CONFERENCE TO THE TRIBUTARY CONFERENCE TO FORM A LINKED CONFERENCE BETWEEN THE ENTERPRISE CALLER AND THE NON-ENTERPRISE CALLER
513

FIG. 5

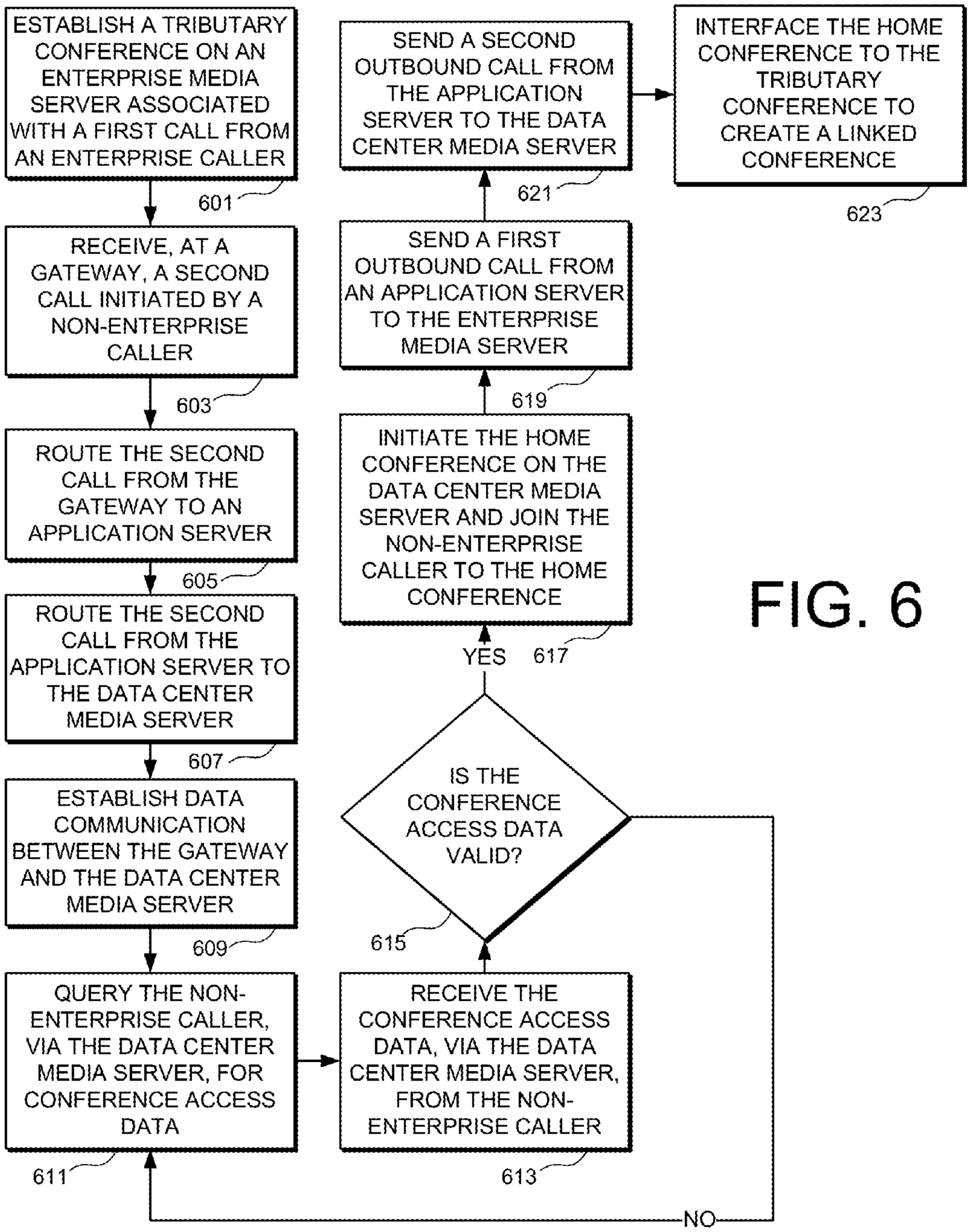

ESTABLISH A TRIBUTARY CONFERENCE ON AN ENTERPRISE MEDIA SERVER ASSOCIATED WITH A FIRST CALL FROM AN ENTERPRISE CALLER
601
RECEIVE, AT A GATEWAY, A SECOND CALL INITIATED BY A NON-ENTERPRISE CALLER
603
ROUTE THE SECOND CALL FROM THE GATEWAY TO AN APPLICATION SERVER
605
ROUTE THE SECOND CALL FROM THE APPLICATION SERVER TO THE DATA CENTER MEDIA SERVER
607
ESTABLISH DATA COMMUNICATION BETWEEN THE GATEWAY AND THE DATA CENTER MEDIA SERVER
609
QUERY THE NON-ENTERPRISE CALLER, VIA THE DATA CENTER MEDIA SERVER, FOR CONFERENCE ACCESS DATA
611
RECEIVE THE CONFERENCE ACCESS DATA, VIA THE DATA CENTER MEDIA SERVER, FROM THE NON-ENTERPRISE CALLER
613
IS THE CONFERENCE ACCESS DATA VALID?
615
NO
YES
617
INITIATE THE HOME CONFERENCE ON THE DATA CENTER MEDIA SERVER AND JOIN THE NON-ENTERPRISE CALLER TO THE HOME CONFERENCE
619
SEND A FIRST OUTBOUND CALL FROM AN APPLICATION SERVER TO THE ENTERPRISE MEDIA SERVER
621
SEND A SECOND OUTBOUND CALL FROM THE APPLICATION SERVER TO THE DATA CENTER MEDIA SERVER
INTERFACE THE HOME CONFERENCE TO THE TRIBUTARY CONFERENCE TO CREATE A LINKED CONFERENCE
623

FIG. 6

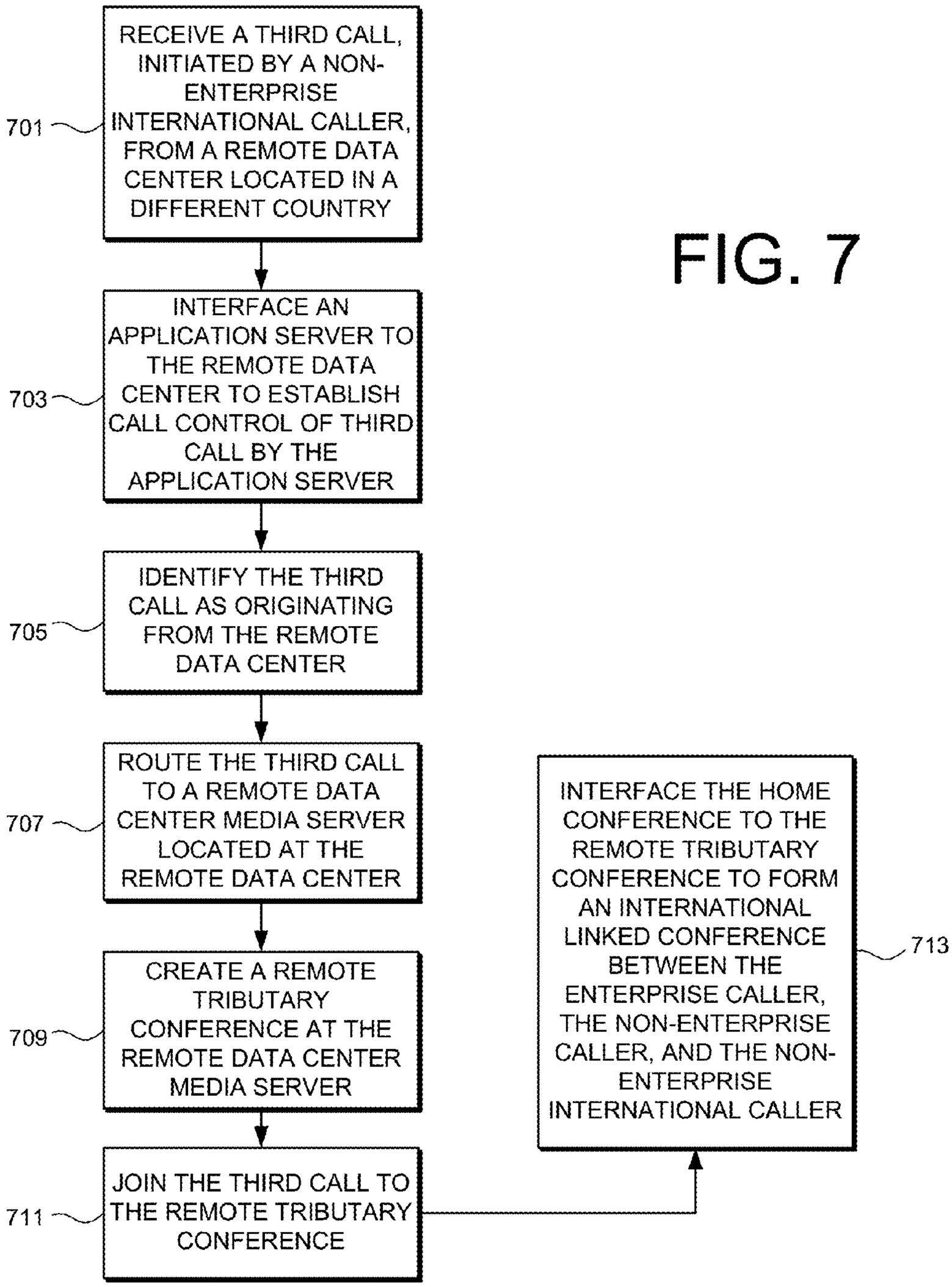

RECEIVE A THIRD CALL, INITIATED BY A NON-ENTERPRISE INTERNATIONAL CALLER, FROM A REMOTE DATA CENTER LOCATED IN A DIFFERENT COUNTRY
701
INTERFACE AN APPLICATION SERVER TO THE REMOTE DATA CENTER TO ESTABLISH CALL CONTROL OF THIRD CALL BY THE APPLICATION SERVER
703
IDENTIFY THE THIRD CALL AS ORIGINATING FROM THE REMOTE DATA CENTER
705
ROUTE THE THIRD CALL TO A REMOTE DATA CENTER MEDIA SERVER LOCATED AT THE REMOTE DATA CENTER
707
CREATE A REMOTE TRIBUTARY CONFERENCE AT THE REMOTE DATA CENTER MEDIA SERVER
709
JOIN THE THIRD CALL TO THE REMOTE TRIBUTARY CONFERENCE
711
INTERFACE THE HOME CONFERENCE TO THE REMOTE TRIBUTARY CONFERENCE TO FORM AN INTERNATIONAL LINKED CONFERENCE BETWEEN THE ENTERPRISE CALLER, THE NON-ENTERPRISE CALLER, AND THE NON-ENTERPRISE INTERNATIONAL CALLER
713

FIG. 7

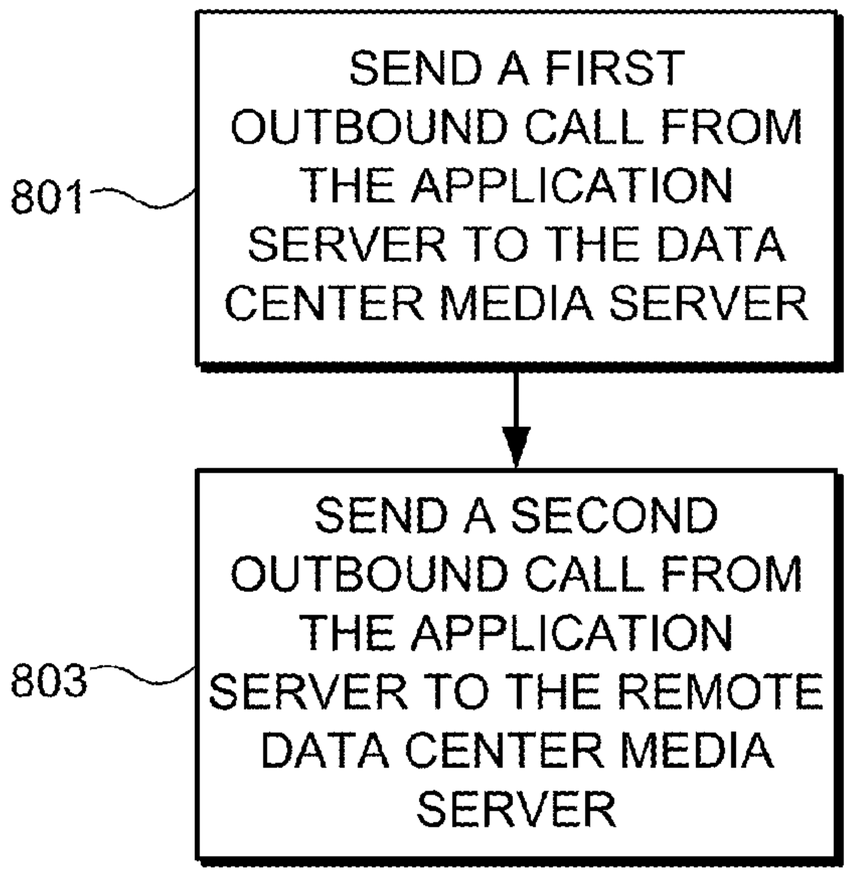

SEND A FIRST OUTBOUND CALL FROM THE APPLICATION SERVER TO THE DATA CENTER MEDIA SERVER
801
SEND A SECOND OUTBOUND CALL FROM THE APPLICATION SERVER TO THE REMOTE DATA CENTER MEDIA SERVER
803

FIG. 8

SYSTEMS AND METHODS FOR CONFERENCING ENTERPRISE AND NON-ENTERPRISE CALLERS

BACKGROUND

1. Field

The present invention relates generally to systems and methods for conferencing callers. More particularly, the present invention relates to conferencing enterprise and non-enterprise callers.

2. Description of the Related Art

Communication between two or more parties is often achieved through conferencing. A conference allows participants to exchange audio, video, and other media-related data with one another, often in real time, and does not require the conference participants to be in the same physical location during the exchange. In some cases, a conference may include participants that are located both inside and outside of an enterprise. However, a conference that includes enterprise and non-enterprise callers can often waste valuable computing resources, or cause devices to be deployed at the enterprise that are unnecessary for the establishment of a conference. Furthermore, current systems may fail to effectively link conferences located on and off of the enterprise.

SUMMARY

The illustrative embodiments described herein are directed to a data processing system and, in particular, to systems and methods for conferencing enterprise and non-enterprise callers. In one embodiment, a method includes receiving a first call initiated by an enterprise caller at an enterprise, communicating with an enterprise media server to initiate a tributary conference on the enterprise media server, joining the enterprise caller to the tributary conference such that the enterprise caller is in data communication with the tributary conference, receiving a second call initiated by a non-enterprise caller via a public switched telephone network, interfacing the non-enterprise caller with a data center media server, creating a home conference on the data center media center, joining the second call to the home conference on the data center media center, and interfacing the home conference on the data center media server to the tributary conference on the enterprise media server to form a linked conference between the enterprise caller and the non-enterprise caller.

In another embodiment, a method includes establishing a tributary conference on an enterprise media server. The tributary conference is in data communication with an enterprise caller at an enterprise in response to a first call from the enterprise caller. The method also includes receiving a second call initiated by a non-enterprise caller, interfacing the non-enterprise caller with a data center media server, creating a home conference on the data center media center, joining the second call to the home conference on the data center media center, and interfacing the home conference on the data center media server to the tributary conference on the enterprise media server to form a linked conference between the enterprise caller and the non-enterprise caller.

In another embodiment, a conferencing system includes an enterprise sub-system. The enterprise sub-system includes a first communication device to initiate a first call from an enterprise caller, and an enterprise media server to host a tributary conference in data communication with the first communication device. The conferencing system also includes a data center sub-system at a separate location from the enterprise sub-system. The data center sub-system includes a gateway to receive a second call initiated by a non-enterprise caller via a public switched telephone network. The non-enterprise caller uses a second communication device to initiate the second call. The data center sub-system also includes a data center media server to host a home conference in data communication with the second communication device, and an application server to interface the home conference on the data center media server with the tributary conference on the enterprise media server.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a schematic, pictorial representation of a conferencing system according to an illustrative embodiment;

FIG. **2** is a schematic diagram showing the interaction between the components in FIG. **1** when a call is placed by an enterprise caller according to one illustrative embodiment;

FIG. **3** is a schematic diagram showing the interaction between the components in FIG. **1** when a call is placed by a non-enterprise caller according to one illustrative embodiment;

FIG. **4** is a schematic, pictorial representation of an international conferencing system that includes at least one international caller according to an illustrative embodiment;

FIG. **5** is a flowchart of a process for conferencing enterprise and non-enterprise callers that is executable by a data center according to an illustrative embodiment;

FIG. **6** is a flowchart of a process for conferencing enterprise and non-enterprise callers that is executable by a data center according to another illustrative embodiment;

FIG. **7** is a flowchart of a process for conferencing enterprise and non-enterprise international callers that is executable by a data center according to an illustrative embodiment; and

FIG. **8** is a flowchart of a process for interfacing a home conference to a remote tributary conference to form an international linked conference as described in FIG. **7**.

DETAILED DESCRIPTION

Referring to FIG. **1**, an illustrative embodiment of a conferencing system **100** includes an enterprise sub-system, or enterprise, **102** and a data center sub-system, or data center, **104** in data communication with one another. The enterprise **102** is any entity having two or more communication devices that are capable of communicating with one another. For example, the enterprise **102** may be an organization, such as a business or government unit, that is interconnected using a local area network (LAN), including a personal area network (PAN), a campus area network (CAN), a metropolitan area network (MAP), or any other network type. Unless otherwise indicated, as used herein, "or" does not require mutual exclusivity. The conferencing system **100**, including either or both of the enterprise sub-system **102** and the data center sub-system **104**, may utilize an Internet Protocol (IP) based backbone distributed architecture, which permits the components within the conferencing system **100** to communicate with one another using packet-based protocols, such as the Session Initiation Protocol (SIP). SIP is a protocol defined by the Internet Engineering Task Force (IETF) and documented under standard RFC3261. In one non-limiting example, the conferencing system **100** may be a Voice Over Internet Protocol (VOIP) network.

The components of the conferencing system **100**, described below, allow an enterprise caller **106** and a non-enterprise caller **108** to participate in a linked conference **109** to allow communication with one another. The linked confer-

ence **109** includes at least two conferences that are in data communication with one another, at least one of which is part of the enterprise **102** and at least one of which is part of the data center **104**. In the example of FIG. **1**, the linked conference **109** includes a tributary conference **110** in data communication with the enterprise caller **106**, and a home conference **111** in data communication with the non-enterprise caller **108**.

Although two conference participants (i.e., the enterprise caller **106** and the non-enterprise caller **108**) are shown in FIG. **1**, any number of callers may participate in the linked conference **109**. The linked conference **109** may be used as a medium through which the enterprise caller **106** and the non-enterprise caller **108** exchange audio, video, audio/video, or other communication-related data between one another. Non-limiting examples of the linked conference **109** include an audio conference, a video conference, an audio/video conference, streaming multimedia distribution, an instant messaging exchange, presence notification using detectors, an online game, a conference call, or other settings in which data may be communicated between the enterprise caller **106** and the non-enterprise caller **108**.

The conferencing system **100** includes a first communication device **112** and a second communication device **114** from which the enterprise caller **106** and the non-enterprise caller **108** may initiate calls, respectively. The first communication device **112** is part of the enterprise network, and the second communication device **114** is outside of the enterprise **102**. Calls made to the data center **104** by the non-enterprise caller using the second communication device **114** may be through a public switched telephone network (PSTN). The first and second communication devices **112**, **114** may be the same or different devices, and are capable of communicating with other devices or entities. Non-limiting examples of the first and second communication devices **112**, **114** include landline phones, Voice Over Internet Protocol (VOIP) phones, cellular phones, walkie talkies, computers (e.g., desktops, laptops, netbooks, and minicomputers), personal digital assistants, digital music players, digital readers, portable gaming devices, web browsing devices, media players, etc. Although the possible devices represented by the first and second communication devices **112**, **114** are numerous, in the non-limiting example of FIG. **1**, the first and second communication devices **112**, **114** are phones.

The enterprise **102** includes a private branch exchange **116** that receives the calls made from the first communication device **112**. The private branch exchange **116** is in data communication with the first communication device **112** and other components of the conferencing system **100**. Data communication between the private branch exchange **116** and the first communication device **112** may use a wired or wireless communication medium. The private branch exchange **116** serves the enterprise **102**, and can assist in routing the calls from the first communication device **112** to various locations. In some embodiments, such as those in which the first communication device **112** are devices other than phones, the private branch exchange **116** may be another type of routing device, or dispensed with altogether.

The enterprise **102** also includes a session border controller **118**. The session border controller **118** is in data communication with the private branch exchange **116** and other components of the conferencing system **100**. In the example in which the conferencing system **100** uses a VOIP network, the session border controller **118** may exert control over the signaling that occurs within the components of the conferencing system **100**. Also, the session border controller **118** may act as an interface between the enterprise **102** and the data center **104**. The session border controller **118** may include an untrusted side **120** and a trusted side **122**. The enterprise network may plug in directly to the untrusted side **120** of the session border controller **118**.

The enterprise **102** also includes an enterprise media server **124**, on which the tributary conference **110** is created using the illustrative embodiments. As described below, data communication between the enterprise media server **124** and other components in the conferencing system **100**, including the private branch exchange **116**, may be established. In hosting the tributary conference **110**, the enterprise media server **124** combines and shares data from and amongst the enterprise callers participating in the tributary conference **110**, including the enterprise caller **106**. As described below, the tributary conference **110** may also be linked with the home conference **111** to create the linked conference **109** so that the enterprise caller **106** can participate in a conference with the non-enterprise caller **108**.

The data center **104** may be at a location that is separate or remote from the enterprise premises, and may include a gateway **126**. The gateway **126** is in data communication with the enterprise **102** and other components in the conferencing system **100**. The gateway **126** may be used as an interface with the enterprise **102** or any other devices external to the data center **104**. The data center **104** also includes an application server **128**, which is in data communication with the enterprise **102**, the gateway **126**, and other components in the conferencing system **100**. In one embodiment, the application server **128** manages, such as by serving a call control function, the tributary conference **110** at the enterprise media server **124**. The management functionality performed by the application server **128** may include conference control, billing, operator support, and other management functions. For example, the application server **128** may serve as a back-to-back user agent that is in data communication between the enterprise caller **106** and the enterprise media server **124**. The application server **128** may also perform resource management, call flow, or data routing within the conferencing system **100**, and communicate with the devices within the conferencing system **100** via SIP or other packet-based messaging. The data center **104** may also include a conferencing database **130** that tracks or stores the status of the tributary conference **110**, home conference **111**, or other conferences managed by the application server **128**. Communication between the enterprise **102** and the data center **104** may be via a data communication medium **132**. In one embodiment, the data communication medium is a wide area network (WAN). Other examples of the data communication medium **132** include a campus area network (CAN), a metropolitan area network (MAP), or any other network type.

In one embodiment of the operation of the conferencing system **100**, the conferencing system **100** is a distributed architecture that allows the tributary conference **110** to be created on the enterprise media server **124** while conference control functionality is performed by the application server **128** at the data center **104**. The enterprise caller **106** initiates a call on the first communication device **112**. The call is received by the private branch exchange **116**. The private branch exchange **116** may then route the call to the untrusted side **120** of the session border controller **118**. The trusted side **122** of the session border controller **118** may then route the call to the gateway **126** at the data center **104** over the data communication medium **132**.

After receiving the call, the gateway **126** may then route the call to the application server **128**. In one embodiment, the application server **128**, upon receiving the call, may identify the call is being associated with the enterprise **102**. The appli-

cation server **128** may also identify the enterprise media server **124** to host the tributary conference **110**. In one example, the identification of the enterprise media server **124** to host the tributary conference **110** may be based on the location of the enterprise media server **124** at the enterprise **102**. The enterprise media server **124**, in one embodiment, is part of a trusted network that is administered by, or otherwise associated with, the same entity that is administered by, or otherwise associated with, the data center **104**.

The application server **128** may then route the call back to the enterprise **102**, and specifically to the enterprise media server **124**. In doing so and thereafter, the application server **128** may act as a back-to-back user agent, or SIP B2B UA, to facilitate the establishment and maintenance of the tributary conference **110** at the enterprise media server **124**. In acting as a back-to-back user agent, the application server **128** may be in data communication between the private branch exchange **116** and the enterprise media server **124**.

After the application server **128** connects the call to the enterprise media server **124**, the enterprise caller **106** may be interfaced with the enterprise media server **124**. In one embodiment, a first data connection **134** may be established between the private branch exchange **116** and the session border controller **118**. A second data connection **136** may also be established between the session border controller **118** and the enterprise media server **124** to establish a resulting data connection between the private branch exchange **116** and the enterprise media server **124**. This resulting data connection, made up of the first and second data connections **134**, **136**, interfaces the private branch exchange **116** with the enterprise media server **124** and allows data communication between these two components. As a result of this resulting data connection, the enterprise caller **106** may also communicate with the enterprise media server **124**. The routing of the call from the application server **128** to the enterprise media server **124** may help to establish the data communication between the private branch exchange **116** and the enterprise media server **124**. One non-limiting example of how the application server **128** may help to establish the data connection between the private branch exchange **116** and enterprise media server **124** is described below in FIG. **2**.

In one embodiment, the first and second data connections **134**, **136** may be real-time transport protocol (RTP) streams that allow the private branch exchange **116** and the enterprise media server **124** to communicate via RTP. RTP is a protocol defined by the IETF for streaming real time multimedia over an IP network in packets. The first and second data connections **134**, **136** may also utilize other real time protocols. By streaming data between the private branch exchange **116** and the enterprise media server **124** via the session border controller **118**, the data need not be streamed via the data center **104**. Thus, in some embodiments, bandwidth needed to stream data between the enterprise **102** and the data center **104** is saved or reduced, and the enterprise caller **106** may incur less or no delay in the conference mixing of their audio.

The enterprise **102** may then communicate with the application server **128** in order to establish, or create, the tributary conference **110** and join the enterprise caller **106** to the tributary conference **110**. In one embodiment, the application server **128** queries the enterprise caller **106**, via the enterprise media server **124**, for conference access data. The conference access data may include identification information, a pass code, a conference code, conferencing configuration information, or other data that can help to authenticate a caller or identify a conference. After receiving the query for conference access data from the application server **128**, the enterprise caller **106** may input the conference access data. The enterprise media server **124** may then send the conference access data inputted by the enterprise caller **106** to the application server **128**. The application server **128** may then determine whether the conference access data entered by the enterprise caller **106** is valid. In one embodiment, a provisioning database (not shown) at the data center **104** may be used to validate the conference access data that is inputted by the enterprise caller **106**. The provisioning database may also confirm that the enterprise media server **124** is available for conference usage. If the application server **128** determines that the conference access data is valid, the application server **128** may initiate the tributary conference **110** on the enterprise media server **124**, or may join the enterprise caller **106** to the tributary conference **110** if the tributary conference **110** is already created.

In one embodiment of the application server **128** initiating the tributary conference **110** on the enterprise media server **124**, the enterprise media server **124** may receive a set of conference creation instructions to create the tributary conference **110** on the enterprise media server **124**. As used herein, the term "set" encompasses a quantity of one or more. The conference creation instructions may be associated with an SIP INFO signal, and may instruct the enterprise media server **124** to create the tributary conference **110**.

The conferencing database **130** may be used to determine if a conference associated with the conference access data entered by the enterprise caller **106** is already created. If no conference has been created, the conferencing database **130** may work in conjunction with the application server **128** to create the tributary conference **110**, and associate a unique conference identifier with the tributary conference **110**.

After the tributary conference **110** has been created on the enterprise media server **124**, the application server **128** may send a set of conference joinder instructions to join the call from the enterprise caller **106** to the tributary conference **110**. The conference joinder instructions may be associated with an SIP INFO signal, and may instruct the enterprise **102** to join the call to the tributary conference **110**. Upon receiving the conference joinder instructions, the call from the enterprise caller **106** may be joined to the tributary conference **110**.

In one embodiment, if the tributary conference **110** is created on an enterprise media server **124** other than the one to which the enterprise caller **106** is connected, the application server **128** may switch the call to the media server that includes the tributary conference **110**. In this way, the conferencing system **100** may join the enterprise caller **106** to the tributary conference **110** when the tributary conference **110** is contained on a media server other than the enterprise media server **124** to which the enterprise caller **106** is connected.

Subsequent enterprise callers at the enterprise **102** may then be joined to the tributary conference **110** so that the subsequent enterprise callers may communicate with the enterprise caller **106** via the tributary conference **110**. By way of illustration, a subsequent enterprise caller (not shown) may initiate a subsequent enterprise call using a different communication device at the enterprise **102**, and the subsequent enterprise call may be received by the private branch exchange **116**. Following a similar route as the call initiated by the enterprise caller **106**, the subsequent enterprise call may be routed to the session border controller **118**, and then routed to the gateway **126** at the data center **104**. The subsequent enterprise call may then be routed from the gateway **126** to the application server **128**, and then connected to the enterprise media server **124**. A new data, or RTP, connection between the private branch exchange **116** and the enterprise media server **124** may be established for the subsequent enterprise call, and for each enterprise call subsequent to the call

made by the enterprise caller **106**. Using the interface between the private branch exchange **116** and the enterprise media server **124**, described above, the subsequent enterprise caller may be prompted to enter conference access data, and this conference access data may be validated at the data center **104** to determine whether the subsequent enterprise caller is authorized to join, or otherwise associated with, the tributary conference **110**. If the subsequent enterprise caller is authorized to join the tributary conference **110**, the application server **128** may send conference joinder instructions to the enterprise **102** so that the subsequent enterprise caller is joined to the tributary conference **110**.

In another embodiment, the non-enterprise caller **108** may be joined into a conference with the enterprise caller **106**. The non-enterprise caller **108** may dial into the data center **104** using the second communication device **114**, and a second, or non-enterprise, call **137** may be made over a PSTN network. In the example of FIG. **1**, the second, or non-enterprise, call **137** is initiated after the call made by the enterprise caller **106**. When the non-enterprise call **137** is initiated after the call made by the enterprise caller **106**, only the tributary conference **110** may be created within the conferencing system **100** until such time as the non-enterprise call **137** is placed by the non-enterprise caller **108**. As a result, the home conference **111** or the linked conference **109** is not created until such time as the non-enterprise call **137** is placed by the non-enterprise caller **108**. In this manner, some resources within the conferencing system **100** are not used until they are needed, resulting in improved resource utilization. In some embodiments, prior to the placement of the non-enterprise call **137**, a logical home conference may be created within the application server **128**, but no home conference **111** may be created on the data center media server **138**. The non-enterprise call **137** from the non-enterprise caller **108** may be received by the gateway **126**, and the gateway **126** may convert the non-enterprise call **137** into an Internet Protocol (IP) call.

After receiving the non-enterprise call **137** from the non-enterprise caller **108**, the data center **104** may interface the non-enterprise caller **108** with a data center media server **138**. In one embodiment, interfacing the non-enterprise caller **108** with the data center media server **138** includes routing the non-enterprise call **137** from the gateway **126** to the application server **128**. The non-enterprise call **137** may then be routed from the application server **128** to the data center media server **138**. Data communication may then be established between the gateway **126** and the data center media server **138**. The data communication between the gateway **126** and the data center media server **138** may be via an RTP connection **140**.

Once communication is established between the gateway **126** and the data center media server **138**, the application server **128** creates the home conference **111** on the data center media server **138**. In one embodiment, the application server **128** queries the non-enterprise caller **108**, via the data center media server **138**, for conference access data. After receiving the query for conference access data from the application server **128**, the non-enterprise caller **108** may input the conference access data. The data center media server **138** may then transmit the conference access data inputted by the non-enterprise caller **108** to the application server **128**. The application server **128** may then determine whether the conference access data entered by the non-enterprise caller **108** is valid. If the application server **128** determines that the conference access data is valid, the application server **128** may initiate the home conference **111** on the data center media server **138**, or may join the non-enterprise caller **108** to the home conference **111** if the home conference **111** is already created.

In one embodiment of the application server **128** initiating the home conference **111** on the data center media server **138**, the data center media server **138** may receive a set of conference creation instructions to create the home conference **111** on the data center media server **138**. The conference creation instructions may be associated with an SIP INFO signal, and may instruct the data center media server **138** to create the home conference **111**.

After the home conference **111** has been created on the data center media server **138**, the application server **128** may send a set of conference joinder instructions to join the non-enterprise call **137** to the home conference **111**. The conference joinder instructions may be associated with an SIP INFO signal, and may instruct the data center media server **138** to join the call to the home conference **111**. Upon receipt of the conference joinder instructions, the non-enterprise call **137** may be joined to the home conference **111**.

Once the home conference **111** has been created and the non-enterprise caller **108** has been joined to the home conference **111**, the application server **128** interfaces the home conference **111** to the tributary conference **110** to form the linked conference **109**, which allows the enterprise caller **106** and the non-enterprise caller **108** to be in a conference with one another. In interfacing the home conference **111** to the tributary conference **110**, audio communication may be established between the home conference **111** and the tributary conference **110**. For example, an RTP connection, or stream, **142** may be used to communicate audio between the home conference **111** and the tributary conference **110**, thereby allowing the non-enterprise caller **108** to communicate with the enterprise caller **106**.

In one embodiment, the home conference **111** is interfaced with the tributary conference **110** by the issuance of two outbound calls from the application server **128**. For example, the application server **128** may send a first outbound call to the enterprise media server **124**, and a second outbound call to the data center media server **138**. In addition, the application server **128** may act as a back-to-back user agent (e.g., B2B SIP UA) for the first and second outbound calls, and may be in data communication between the enterprise media server **124** and the data center media server **138**. The first outbound call may be joined to the tributary conference **110**, and the second outbound call may be joined to the home conference **111**, thereby creating an audio link between the tributary conference **110** and the home conference **111**.

The illustrative embodiments described herein may be extended to multiple enterprises and data centers so that a distributed conference that includes multiple tributary conferences may be implemented within the conferencing system **100**. These multiple tributary and home conferences may be interconnected via audio, RTP, or other data connections to allow for a linked conference that includes distributed participants.

The illustrative embodiments may be useful in conserving conferencing system resources. For example, the home conference **111** may only be created on the data center media server **138** when the non-enterprise caller **108** joins the conference at the data center **104**. Prior to the non-enterprise caller **108** joining the conference at the data center **104**, only the tributary conference **110** may be created at the enterprise media server **124**, and the tributary conference **110** may be used to conference callers at the enterprise **102**. In this manner, bandwidth, component usage, and other resources of the conferencing system **100** may be conserved until such time as they are needed, such as when the non-enterprise caller **108** joins a conference. Also, when only enterprise callers are participating in a conference, the tributary conference **110**

may be implemented by using a compact deployment of components at the enterprise **102** (e.g., session border controller **118** and enterprise media server **124**) and by relying on components of the data center **104** to implement certain aspects of the tributary conference **110**.

Referring to FIG. **2**, one non-limiting example of how the illustrative embodiments described in FIG. **1** may be implemented is shown. In particular, FIG. **2** shows the enterprise caller **106** placing a call and being joined to the tributary conference **110** in FIG. **1**. In FIG. **2**, no non-enterprise caller, such as the non-enterprise caller **108** in FIG. **1**, is placing a call requesting to be in a conference with the enterprise caller **106**.

The enterprise caller **106**, using the first communication device **112**, dials into the private branch exchange **116**. The private branch exchange **116** may then send an SIP INVITE signal to the session border controller **118**. The SIP INVITE signal, and several other instructions described in FIG. **2**, is part of the Session Initiation Protocol (SIP) that is usable to control multimedia communications sessions, such as video, audio, or audio/video calls over Internet Protocol. The parentheticals (e.g., (1), (2), etc.) after the SIP signals in FIG. **2**, as well as FIG. **3** below, are used to signify SIP signals that are associated with one another. For example, SIP signals that are both followed by a (1) may be in response to one another.

The session border controller **118** may then send an SIP INVITE to the gateway **126**. The gateway **126** may send an SIP INVITE to the application server **128**. The application server **128** may send an SIP INVITE to the enterprise media server **124**. The enterprise media server **124** then sends a 200 OK signal to the application server **128**. The application server **128** then sends a 200 OK signal to the gateway **126**. The gateway **126** then sends a 200 OK signal to the session border controller **118**. The session border controller **118** sends a 200 OK signal to the private branch exchange **116**.

In response to receiving the 200 OK signal from the session border controller **118**, the private branch exchange **116** sends an ACK signal to the session border controller **118**. A real-time transport protocol (RTP) connection **234** may then be established between the private branch exchange **116** and the session border controller **118**. Elements of FIGS. **2** and **3** that are analogous to elements in FIG. **1** have been shown by indexing the reference numerals by **100**. The session border controller **118** may then send an ACK signal to the gateway **126**, and the gateway **126** may send an ACK signal to the application server **128**. The application server **128** may send an ACK signal to the enterprise media server **124**. In response to receiving the ACK signal from the application server **128**, an RTP connection **236** is established between the session border controller **118** and the enterprise media server **124**.

A composite, or resulting, data link, made up of the RTP connections **234** and **236**, allows data communication between the private branch exchange **116** and the enterprise media server **124**. This composite data link allows the enterprise caller **106** to communicate with the application server **128** to, e.g., create or join a conference.

Next, the application server **128** sends an SIP INFO signal to the enterprise media server **124** that initiates a prompt to collect conference access data, such as a pass code. The enterprise media server **124** responds with a 200 OK signal to the application server **128**. The conference access data may be entered by the enterprise caller **106**, and this conference access data may be passed to the application server **128** using an SIP INFO signal from the enterprise media server **124** to the application server **128**. The application server **128** may then respond with a 200 OK signal to the enterprise media server **124**.

The application server **128** may then send an SIP INFO signal to the enterprise media server **124**, which may be associated with conference creation instructions, to create a conference at the enterprise media server **124**. The enterprise media server **124** may then respond with a 200 OK signal to the application server **128**. The application server **128** may then send an SIP INFO signal, which may be associated with conference joinder instructions, to the enterprise media server **124** to join the enterprise caller **106** to the conference. The enterprise media server **124** may then respond with a 200 OK signal to the application server **128**. The packet-based signaling described in FIG. **2** is only one example of how the conferencing system **100** described in FIG. **1** may be implemented.

Referring to FIG. **3**, another non-limiting example of how the illustrative embodiments described in FIG. **1** may be implemented is shown. In particular, the interaction described in FIG. **3** may occur after the interaction described in FIG. **2**, and may be triggered when the non-enterprise caller **108** dials into the data center **104** in FIG. **1** over a PSTN network.

The non-enterprise caller **108**, using the second communication device **114**, dials into the data center, and the call is received by the gateway **126**. The gateway **126** may then send an SIP INVITE to the application server **128**. The application server **128** may then send an SIP INVITE to the data center media server **138**, and the data center media server **138** may respond by sending a 200 OK signal to the application server **128**. The application server **128** may then send a 200 OK signal to the gateway **126**. In response, the gateway **126** may send an ACK to the application server **128**, and the application server **128** may then send an ACK to the data center media server **138**. An RTP connection **240** may then be established between the gateway **126** and the data center media server **138**.

Next, the application server **128** sends an SIP INFO signal to the data center media server **138** that initiates a prompt to collect conference access data, such as a pass code. The data center media server **138** responds with a 200 OK signal to the application server **128**. The conference access data may be entered by the non-enterprise caller **108**, and this conference access data may be passed to the application server **128** using an SIP INFO signal from the data center media server **138** to the application server **128**. The application server **128** may then respond with a 200 OK signal to the data center media server **138**.

The application server **128** may then send an SIP INFO signal to the data center media server **138**, which may be associated with conference creation instructions, to create a home conference at the data center media server **138**. The data center media server **138** may then respond with a 200 OK signal to the application server **128**. The application server **128** may then send an SIP INFO signal, which may be associated with conference joinder instructions, to the data center media server **138** to join the non-enterprise caller **108** to the conference. The data center media server **138** may then respond with a 200 OK signal to the application server **128**.

The application server **128** then sends an SIP INVITE to the enterprise media server **124**, which responds with a 200 OK back to the application server **128**. The application server **128** sends an SIP INVITE to the data center media server **138**, which responds with a 200 OK back to the application server **128**. The application server **128** then issues two ACK signals: one to the enterprise media server **124**, and the other to the data center media server **138**. An RTP connection **242** is then established between the enterprise media server **124** and the data center media server **138**. The RTP connection **242** allows for an audio link between the enterprise media server **124** and

the data center media server **138**, and creates a linked conference between the conferences residing on the enterprise media server **124** and the data center media server **138**.

The application server **128** may then send an SIP INFO signal, which may include conference joinder instructions, to the data center media server **138**. The data center media server **138** may respond with a 200 OK signal to the application server **128**. The application server **128** may then send an SIP INFO signal, which may include conference joinder instructions, to the enterprise media server **124**. The enterprise media server **124** may respond with a 200 OK signal to the application server **128**. The packet-based signaling described in FIG. **3** is only one example of how the conferencing system **100** described in FIG. **1** may be implemented.

Referring to FIG. **4**, an illustrative embodiment of an international conferencing system **344** includes the enterprise **102**, the data center **104**, and a remote data center **346** located in a different country than the data center **104**. The enterprise **102** and the data center **104** portions of the conferencing system **344** have been simplified in FIG. **4** to aid understanding of the international aspects of the conferencing system **344**. However, the enterprise **102** and the data center **104** may contain similar or additional components as the enterprise **102** and the data center **104** described in FIG. **1**.

In FIG. **4**, a non-enterprise international caller **348** uses a third communication device **350** to join into a conference with the enterprise caller **106** and the non-enterprise caller **108**. In the example in FIG. **4**, the non-enterprise international caller **348** may place an international call **352** via a PSTN network after the enterprise caller **106** and the non-enterprise caller **108** have been joined into a linked conference, such as the linked conference **109** described in FIG. **1**. A remote tributary conference **354**, to which the non-enterprise international caller **348** is joined, may be created on a remote data center media server **356**. Data communication may then be established between the home conference **111** and the remote tributary conference **354** to establish, or form, an international linked conference **358** between the tributary conference **110**, the home conference **111**, and the remote tributary conference **354**.

The non-enterprise international caller **348** dials into the remote data center **346**, and the international call **352** is received by a remote gateway **360**. The remote gateway **360** forwards the international call **352** to a remote application server **362**, and the remote application server **362** connects the international call **352** to the remote data center media server **356**. A data connection, such as an RTP connection **364**, is then established between the remote gateway **360** and the remote data center media server **356**, allowing communication between the non-enterprise international caller **348** and the remote data center media server **356**. Conference access data may then be collected from the non-enterprise international caller **348**. The conference access data, in one embodiment, may be collected using dual-tone multi-frequency (DTMF). If the conference access data entered by the non-enterprise international caller **348** is valid, the remote tributary conference **354** may be created on the remote data center media server **356**. The non-enterprise international caller **348** may then be joined to the remote tributary conference **354**.

The remote application server **362** may then recognize that the non-enterprise international caller **348** is attempting to join a conference having a home at the data center **104**. The remote application server **362** may then issue an SIP REFER to the remote gateway **360** to transfer the international call **352** to the application server **128** at the data center **104**.

The international call **352** is then received at the data center **104**, and specifically may be received at the application server **128**. The application server **128** identifies the international call **352** as originating from the remote data center **346**. The application server **128** may then connect the international call **352** to the remote data center media server **356** at the remote data center **346**. In one embodiment, any existing RTP connection that provides call control to the remote application server **362** may be torn down. The application server **128** may be interfaced with the remote data center **346** to establish call control of the international call **352** by the application server **128**. For example, an RTP connection may be established that provides call control of the international call **352** to the application server **128** at the data center **104**.

In one embodiment, instead of being created by the remote application server **362**, the remote tributary conference **354** may be created by the application server **128** when the application server **128** has call control of the international call **352**. In this embodiment, the application server **128** may then link the remote tributary conference **354** to the home conference **111** at the data center **104**, and join the international call **352** to the remote tributary conference **354**.

Once the non-enterprise international caller **348** is joined to the remote tributary conference **354** on the remote data center media server **356**, the application server **128** may interface the home conference **111** to the remote tributary conference **354** to form the international linked conference **358** between the enterprise caller **106**, the non-enterprise caller **108**, and the non-enterprise international caller **348**. In one embodiment, the home conference **111** and the remote tributary conference **354** is interfaced by the issuance of two outbound calls by the application server **128**. For example, the application server **128** may issue a first outbound call to the data center media server **138**, and issue a second outbound call to the remote data center media server **356**. An RTP stream **366** may then be established between the data center media server **138** and the remote data center media server **356**. In one embodiment, a first outbound call is joined to the home conference **111** and a second outbound call is joined to the remote tributary conference **354** to create an audio link between the home conference **111** and the remote tributary conference **354**.

In an alternate embodiment, the remote data center **346**, instead of being located in a separate country than the data center **104**, is located in a different region or jurisdiction. Using the illustrative embodiments described in FIG. **4**, global callers may be joined into conferences with enterprise and non-enterprise callers using an interconnected distributed conferencing system, such as the international conferencing system **344**.

Referring to FIG. **5**, an illustrative embodiment of a process that may be executed by a data center, such as the data center **104** in FIG. **1**, includes establishing a tributary conference on enterprise media server (step **501**). In one embodiment, the tributary conference is in data communication with the enterprise caller at an enterprise in response to a call from the enterprise caller. The method includes determining whether a call initiated by a non-enterprise caller is received (step **503**). If the process determines that no call initiated by a non-enterprise caller is received, the process refrains from creating a home conference on the data center media server (step **505**). The process then returns to step **503**.

If the process determines that a call initiated by a non-enterprise caller is received, the process interfaces the non-enterprise caller with a data center media server (step **507**). The process creates a home conference on the data center media server (step **509**). The process joins the call initiated by

the non-enterprise caller to the home conference (step **511**). The process interfaces the home conference to the tributary conference to form a linked conference between the enterprise caller and the non-enterprise caller (step **513**).

Referring to FIG. **6**, an illustrative embodiment of a process that may be executed by a data center, such as the data center **104** in FIG. **1**, includes establishing a tributary conference on enterprise media server associated with a first call from an enterprise caller (step **601**). The process receives, at a gateway, a second call initiated by a non-enterprise caller (step **603**). The process routes the second call from the gateway to an application server (step **605**). The process routes the second call from the application server to the data center media server (step **607**).

The process establishes data communication between the gateway and the data center media server (step **609**). The process queries the non-enterprise caller, via the data center media server, for conference access data (step **611**). The process receives the conference access data, via the data center media server, from the non-enterprise caller (step **613**). The process determines whether the conference access data is valid (step **615**). If the process determines that the conference access is not valid, the process returns to step **611**.

If the process determines that the conference access data is valid, the process initiates the home conference on the data center media server and joins the non-enterprise caller to the home conference (step **617**). The process sends a first outbound call from an application server to the enterprise media server (step **619**). The process sends a second outbound call from the application server to the data center media server (step **621**). The process interfaces the home conference to the tributary conference to create a linked conference (step **623**).

Referring to FIG. **7**, an illustrative embodiment of a process that allows for global callers and which may be executed by a data center, such as the data center **104** in FIG. **1**, is shown. The process in FIG. **7**, in one embodiment, may occur after, or approximately after, the process(es) described in FIG. **5** or **6**. The process includes receiving a third call, initiated by a non-enterprise international caller, from a remote data center located in a different country (step **701**). The process interfaces an application server to the remote data center to establish call control of the third call by the application server (step **703**). The process identifies the third call as originating from the remote data center (step **705**). The process routes the third call to a remote data center media server located at the remote data center (step **707**).

The process creates a remote tributary conference at the remote data center media server (step **709**). The process joins the third call to the remote tributary conference (step **711**). The process interfaces the home conference to the remote tributary conference to form an international linked conference between the enterprise caller, the non-enterprise caller, and the non-enterprise international caller (step **713**).

Referring to FIG. **8**, a process for interfacing the home conference to the remote tributary conference to form an international linked conference, referred to in step **713** in FIG. **7**, may include sending a first outbound call from the application server to the data center media server (step **801**). The process sends a second outbound call from the application server to the remote data center media server (step **803**).

The flowcharts and block diagrams in the different depicted embodiments illustrate the architecture, functionality, and operation of some possible implementations of apparatus, methods and computer program products. In this regard, each block in the flowchart or block diagrams may represent a module, segment, or portion of code, which comprises one or more executable instructions for implementing the specified function or functions. In some alternative implementations, the function or functions noted in the block may occur out of the order noted in the Figures. For example, in some cases, two blocks shown in succession may be executed substantially concurrently, or the blocks may sometimes be executed in the reverse order, depending upon the functionality involved.

The principles of the present invention can take the form of an entirely hardware embodiment, an entirely software embodiment, or an embodiment containing both hardware and software elements. In one embodiment, the invention is implemented in software, which includes but is not limited to, firmware, resident software, microcode, and other computer readable code.

Furthermore, the principles of the present invention can take the form of a computer program product accessible from a computer-usable or computer-readable medium providing program code for use by or in connection with a computer or any instruction execution system. For the purposes of this description, a computer-usable or computer readable medium can be any tangible apparatus that can contain, store, communicate, propagate, or transport the program for use by or in connection with the instruction execution system, apparatus, or device.

As used herein, including in the claims, the terms first, second, third, etc. . . . used in relation to calls (e.g., first call, second call, third call, etc.) are for reference or identification purposes only, and these terms are not intended to describe or suggest a number, order, source, purpose, or substantive quality for any call for which such a term is used. For example, the "second" call, initiated by a non-enterprise caller, or the "third" call, initiated by a non-enterprise international caller, may be received before the "first" call initiated by an enterprise caller. The conferencing system described in the illustrative embodiments is able to conference callers as described herein regardless of the order in which the described calls are received.

The previous detailed description is of a small number of embodiments for implementing the invention and is not intended to be limiting in scope. One of skill in this art will immediately envisage the methods and variations used to implement this invention in other areas than those described in detail. The following claims set forth a number of the embodiments of the invention disclosed with greater particularity.

What is claimed is:

1. A method for conferencing enterprise and non-enterprise callers, the method comprising:

receiving a first call initiated by an enterprise caller at an enterprise;

communicating with an enterprise media server to initiate a tributary conference on the enterprise media server;

joining the enterprise caller to the tributary conference such that the enterprise caller is in data communication with the tributary conference;

receiving a second call initiated by a non-enterprise caller via a public switched telephone network at a gateway of a data center;

converting the second call into an internet protocol call at the data centre;

interfacing the non-enterprise caller with a data center media server of the data center;

creating a home conference on the data center media server;

joining the second call to the home conference on the data center media server;

interfacing the home conference on the data center media server to the tributary conference on the enterprise media server to form a linked conference between the enterprise caller and the non-enterprise caller;

wherein interfacing the non-enterprise caller with the data center media server comprises:

routing the second call from the gateway to an application server of the data center;

routing the second call from the application server to the data center media server; and

establishing data communication between the gateway and the data center media server.

2. The method of claim **1**, wherein creating the home conference on the data center media server and joining the non-enterprise caller to the home conference comprises:

querying the non-enterprise caller, via the data center media server, for conference access data;

receiving the conference access data, via the data center media server, from the non-enterprise caller;

determining whether the conference access data is valid; and

initiating the home conference on the data center media server and joining the non-enterprise caller to the home conference in response to the conference access data being valid.

3. The method of claim **1**, wherein interfacing the home conference on the data center media server to the tributary conference on the enterprise media server comprises:

sending a first outbound call from an application server to the enterprise media server;

sending a second outbound call from the application server to the data center media server;

joining the first outbound call to the tributary conference; and

joining the second outbound call to the home conference.

4. The method of claim **1**, wherein interfacing the home conference on the data center media server to the tributary conference on the enterprise media server comprises:

sending a first outbound call from an application server to the enterprise media server;

sending a second outbound call from the application server to the data center media server; and

wherein the application server acts as a back-to-back user agent in data communication between the enterprise media server and the data center media server.

5. The method of claim **1**, further comprising:

receiving a third call from a remote data center, the third call initiated by a non-enterprise international caller, the remote data center being located in a different country;

identifying the third call as originating from the remote data center;

routing the third call to a remote data center media server located at the remote data center;

interfacing an application server to the remote data center to establish call control of the third call by the application server;

joining the third call to a remote tributary conference at the remote data center media server;

interfacing the home conference on the data center media server to the remote tributary conference on the remote data center media server to form an international linked conference between the enterprise caller, the non-enterprise caller, and the non-enterprise international caller.

6. The method of claim **1**, further comprising:

receiving a third call from a remote data center, the third call initiated by a non-enterprise international caller;

identifying the third call as originating from the remote data center;

routing the third call to a remote data center media server located at the remote data center;

interfacing an application server to the remote data center to establish call control of the third call by the application server;

creating a remote tributary conference at the remote data center media server;

joining the third call to the remote tributary conference;

interfacing the home conference on the data center media server to the remote tributary conference on the remote data center media server to form an international linked conference between the enterprise caller, the non-enterprise caller, and the non-enterprise international caller, wherein interfacing the home conference to the remote tributary conference comprises:

sending a first outbound call from the application server to the data center media server;

sending a second outbound call from the application server to the remote data center media server;

joining the first outbound call to the home conference; and

joining the second outbound call to the remote tributary conference.

7. The method of claim **1**, further comprising:

receiving a third call from a remote data center, the third call initiated by a non-enterprise international caller, the remote data center being located in a different country;

identifying the third call as originating from the remote data center;

routing the third call to a remote data center media server located at the remote data center;

interfacing an application server to the remote data center to establish call control of the third call by the application server;

creating a remote tributary conference at the remote data center media server;

joining the third call to the remote tributary conference; and

interfacing the home conference on the data center media server to the remote tributary conference on the remote data center media server to form an international linked conference between the enterprise caller, the non-enterprise caller, and the non-enterprise international caller, wherein interfacing the home conference to the remote tributary conference comprises:

sending a first outbound call from the application server to the data center media server;

sending a second outbound call from the application server to the remote data center media server, the second outbound call being sent at about a same time as the first outbound call; and

joining the second call and the third call to the international linked conference.

8. The method of claim **1**, further comprising:

joining the first call and the second call to the linked conference.

9. The method of claim **1**, wherein interfacing the home conference on the data center media server to the tributary conference on the enterprise media server comprises establishing audio communication between the home conference and the tributary conference.

10. The method of claim **1**, wherein interfacing the home conference on the data center media server to the tributary conference on the enterprise media server comprises establishing a real-time transport protocol data stream between the

home conference and the tributary conference, the real-time transport protocol data stream being used communicate audio between the home conference and the tributary conference.

11. The method of claim **1**, wherein the second call is initiated after the first call.

12. A method for conferencing enterprise and non-enterprise callers, the method comprising:

establishing a tributary conference on an enterprise media server, the tributary conference in data communication with an enterprise caller at an enterprise in response to a first call from the enterprise caller;

receiving a second call initiated by a non-enterprise caller at a gateway of a data center;

converting the second call into an internet protocol call at the data centre;

interfacing the non-enterprise caller with a data center media server of the data center;

creating a home conference on the data center media server;

joining the second call to the home conference on the data center media server; and

interfacing the home conference on the data center media server to the tributary conference on the enterprise media server to form a linked conference between the enterprise caller and the non-enterprise caller;

wherein interfacing the non-enterprise caller with the data center media server comprises:

routing the second call from the gateway to an application server of the data center;

routing the second call from the application server to the data center media server; and

establishing data communication between the gateway and the data center media server.

13. The method of claim **12**, wherein the second call is initiated via a public switched telephone network.

14. The method of claim **12**, wherein the home conference is created on the data center media server after the second call is received.

15. The method of claim **12**, wherein interfacing the home conference on the data center media server to the tributary conference on the enterprise media server comprises:

sending a first outbound call from an application server to the enterprise media server;

sending a second outbound call from the application server to the data center media server;

joining the first outbound call to the tributary conference; and

joining the second outbound call to the home conference.

16. A conferencing system comprising:

an enterprise sub-system comprising:

a first communication device to initiate a first call from an enterprise caller; and

an enterprise media server to host a tributary conference in data communication with the first communication device; and

a data center sub-system at a separate location from the enterprise sub-system, the data center sub-system comprising:

a gateway to receive a second call initiated by a non-enterprise caller via a public switched telephone network, the non-enterprise caller using a second communication device to initiate the second call, the gateway to convert the second call into an internet protocol call;

a data center media server to host a home conference in data communication with the second communication device; and

an application server to interface the home conference on the data center media server with the tributary conference on the enterprise media server by routing the second call from the application server to the data center media server and establishing data communication between the gateway and the data center media server.

17. The conferencing system of claim **16**, wherein the application server is adapted to establish audio communication between the home conference and the tributary conference.

18. The conferencing system of claim **16**, further comprising:

a remote data center sub-system in a different country than the data center sub-system, the remote data center sub-system comprising:

a remote gateway to receive a third call initiated by a non-enterprise international caller, the non-enterprise international caller using a third communication device to initiate the third call;

a remote data center media server to host a remote tributary conference in data communication with the third communication device; and

wherein the application server at the data center sub-system is adapted to interface the home conference on the data center media server with the remote tributary conference on the remote data center media server such that the first communication device, the second communication device, and the third communication device are in data communication with one another.

19. The conferencing system of claim **16**, further comprising:

a remote data center sub-system in a different country than the data center sub-system, the remote data center sub-system comprising:

a remote gateway to receive a third call initiated by a non-enterprise international caller, the non-enterprise international caller using a third communication device to initiate the third call;

a remote data center media server to host a remote tributary conference in data communication with the third communication device;

a remote application server to establish data communication between the remote gateway and the remote data center media server such that the third communication device is in data communication with the remote data center media server, the remote application server also adapted to initiate routing of the third call to the application server at the data center sub-system; and

wherein the application server at the data center sub-system is adapted to interface the home conference on the data center media server with the remote tributary conference on the remote data center media server such that the first communication device, the second communication device, and the third communication device are in data communication with one another.

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